DOCUMENT RESUME

ED 331 804 SP 033 030

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TITLE Changes in Attitudes within First-Year Teachers in Urban Schools.
PUB DATE Apr 91
NOTE 28p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, April 2-6, 1991).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Administrator Role; Age Differences; *Attitude Change; *Beginning Teachers; Collegiality; Educational Policy; Elementary Secondary Education; Predictor Variables; Resource Materials; *Self Efficacy; Supervisory Methods; Teacher Attitudes; *Urban Teaching
IDENTIFIERS *Connecticut

ABSTRACT

This study was conducted in the Connecticut public schools during the 1989-90 school year to determine why it is so difficult for urban school districts to recruit and retain teachers. The specific purpose was to identify policy-manipulable variables that predict changes in self-efficacy beliefs within first-year teachers in urban schools. This bifurcated study had a qualitative component involving 5 first-year teachers representing elementary, middle, and high school levels in Hartford and a companion quantitative study involving surveys of 56 beginning teachers in 9 urban districts in Connecticut. Interviews and questionnaires were used to understand the beginning teachers' experiences and relationships with colleagues, supervisors, students, and parents. The teachers' attitudes toward teaching and their self-efficacy beliefs were examined and tracked over the course of the year. The study concluded that self-efficacy is a central determinant of a person's ability to exert power and influence. The findings showed that, in urban schools, changes in teachers' self-efficacy beliefs are influenced by variables that are subject to manipulation. Novices need opportunities for collaboration, allocation of resources, and the attention of supervisors in order to feel the ability to exert power and influence. (LL)

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CHANGES IN ATTITUDES WITHIN FIRST-YEAR TEACHERS IN URBAN SCHOOLS

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A paper presented at the annual meeting of the
American Educational Research Association
Chicago, Illinois
April, 1991

SP 033 030

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

This paper reports the findings from a study conducted in Connecticut schools during the 1989-90 school year. The study was designed to identify policy-manipulable variables that predict changes in self-efficacy beliefs within first-year teachers in urban schools. Key findings based on the triangulation of results from both qualitative and quantitative components are presented. No attempt is made to report the depth and breath of the qualitative findings in this paper.

I. BACKGROUND

Two phenomena formed the impetus for this study. One was the difficulty urban school districts are having recruiting and retaining teachers. The second concerned researchers' reports of the commonly experienced, often dramatic transition from "the missionary ideals formed during teacher training [to] the harsh and rude reality of everyday classroom life" (Veenman, 1984). The existence of these factors underscored the importance of the induction year for teachers in urban settings. I chose to examine the effect of alterable variables on the self-efficacy beliefs of novices.

Self-efficacy has been described as "people's beliefs about their capabilities to exercise control over events that affect their lives" (Bandura, 1989, p. 1). The self-efficacy mechanism is a central determinant of a person's ability to exert power, action, and influence. Several studies have implicated the importance of teachers' self-efficacy beliefs. Gaede (1987) discovered that teachers' ratings of self-assessed professional knowledge declined during the initial teaching year. Glassberg (1979) reported a positive correlation between self-efficacy beliefs, level of cognitive functioning, and effective teaching strategies. Case studies have revealed that interaction with students influences teachers' self-efficacy beliefs regarding classroom management and how beginning teachers plan their curriculum and lessons (Bullough, 1989; Bullough, Knowles, & Crow, 1989).

Hogben and Petty studied the attitudes of preservice and beginning teachers and observed that "the first few weeks of teaching appear to have had a strong effect on the beginning teachers' attitudes" (1979, p. 218). They discovered that the average attitudes of education students during their final year at the university remained quite stable, while a decrease in average attitude for the group followed into their first year of teaching

was recorded for 15 of the 21 concepts studied. "[T]he overall picture is one of students who come to their final year of university with attitudes towards teaching which were developed at an earlier time. The impact of the university is evident but does not last beyond the first few high-pressure weeks of full-time teaching, during which a reorientation to what might be called the orthodox position is already well under way" (Hogben & Petty, 1979, p. 219).

Ogbu (1974) theorized that self-efficacy beliefs of teachers are one component of a self-fulfilling prophecy that contributes to school failures among ethnic and racial minorities. Both folk and "scientific" definitions of subordinate minorities proclaim their intellectual and cultural inferiority to whites, forming the basis on which schools sort and classify children. Teachers who accept this belief system develop diminished regard for their own capability to realize significant academic progress with minority students.

To date, little research has been done on the relationships between teacher self-efficacy, attitudes toward teaching, instructional effectiveness, and teacher attrition. The evidence cited suggests that substantial relationships may exist. Bandura (1989) noted that diminished self-efficacy beliefs can give rise to anxiety, and then despondency, factors that may be associated with teacher attrition career paths and effectiveness. Haberman (1987 & 1988) has suggested the use of attitude and self-efficacy assessments, along with other criteria, to predict candidates who will be successful urban teachers.

II. METHODOLOGY

II.A Toward an Interactive Paradigm

In his review of the research on the perceived problems of beginning teachers, Veenman (1984) acknowledged the limits of many of the studies he examined. "They do not consider the various teacher characteristics or individual differences that may influence teachers' perceptions and performance. Nor do they identify and describe the context so that we can understand how environments with varying supports and challenges affect the beginning teacher" (p. 160).

Veenman (1984) concluded that researchers should consider the convergence of individual perception *and* the context of institutional

settings. He stated that "we still know little about the person-specific and situation-specific nature of these problems . . . little or no information about the features of educational situations that teachers experience as problematic, about the psychological dimensions of meaning underlying these situations, and about the significant personal characteristics of beginning teachers that interact with these situations. Research based on an interactive paradigm that takes into account person-environment interactions, might provide that much-needed information" (p. 168).

Besides the lack of studies that have utilized an interactive paradigm, few studies have focused on the experiences of beginning teachers in urban schools. The present study utilizes multiple research methods and focuses on teachers in urban districts.

This was a bifurcated study, with the two trunks of the design supporting each other. A qualitative component of my research involved detailed observation of, and interviews with, five beginning teachers in one urban district in Connecticut over the course of the 1989-90 school year. A companion quantitative study involved surveys of 56 beginning teachers in nine urban districts in Connecticut during school-year 1989-90. Analyses of the survey data are used to validate and illuminate findings from the qualitative data and determine whether the findings of the qualitative study can be generalized beyond the particular contexts and idiosyncrasies of the five subjects in the case studies. The findings are then used to make recommendations regarding teacher induction and assignment policy in urban schools.

II.B Qualitative Study of Five Beginning Teachers

II.B.1 Selection of teachers: Five first-year teachers, each from a different school, were selected from the Hartford public school system for the qualitative component of the study. The schools from which the teachers were chosen included three elementary, one middle, and one high school (Hartford had 25 elementary schools, five of which were K-8 schools; two middle schools, grades 7-8; and three high schools). The elementary schools from which teachers were selected represented a continuum from low to high aggregate student achievement, as measured by the state mastery test.

For purposes of this study, beginning teachers were defined as those individuals who had no full-time teaching experience prior to school-year

1989-90. Only teachers who agreed to participate for a full year were selected. Likewise, the building principals had to agree to the teachers' participation.

II.B.2 Interviews and observations: Each teacher was interviewed once every two weeks during the school year at the school site. Every second interview was preceded by a classroom observation of a lesson taught by the beginning teacher. The longitudinal classroom observations had two foci: the teacher and the developing classroom social structure.

Interviews were organized to identify and understand the beginning teacher's expectations; her relationships with colleagues, supervisors, students, and parents; and the perceived effects of institutional constraints and supports. Interviews that followed classroom visits drew on observed events and sought teacher interpretation of observed behavior. Through the interviews, the teacher's attitudes toward teaching and self-efficacy beliefs were examined and tracked over the course of the year.

Interviews with selected administrators and colleagues were conducted during the second semester of the school year to provide additional perspectives on the experience of the first-year teacher.

II.B.3 Analysis of Interview and Observational Data: A thematic approach was used to code and analyze the interview and observational data. Initially, themes were identified based on beginning teacher expectations; the teacher's relationships with colleagues, supervisors, students, and parents; sources of support for the beginning teacher; and the effects of institutional constraints. Subsequent analyses of the data uncovered more salient themes that revealed other factors and dynamics affecting the first-year experience.

II.C Quantitative Study of First-Year Teachers in Urban Schools

II.C.1 Survey Development: According to researchers (Gaede, 1978; Corcoran, 1981; Hogben & Petty, 1979; Bullough, 1989), substantial changes in self-efficacy beliefs and attitudes toward teaching occur during the first year of teaching. To capture these changes and identify policy-manipulable variables by which such changes are predicted, two questionnaires were administered, the first in late September and the second in February.

The questionnaires were designed to capture changes in various dimensions of teacher belief. Changes in teachers' attitudes about students and teaching and changes in teachers' self-efficacy beliefs regarding their ability to compete with students' environmental influences, to enlist school system resources, and to influence student academic achievement were measured using multiple items. Each item consisted of a seven-point scaled response to a belief statement, anchored at four points (strongly agree, mildly agree, mildly disagree, strongly disagree).

Variables that were hypothesized to predict changes in attitude and self-efficacy were also measured. Teachers were asked to indicate the presence of various instructional components, including school curriculum, student tracking (grouping) system, and student assessment; organizational variables, including school structure, regulations, rules, teacher supervision, and provision of mentoring and support; relational variables, considering parents, students, colleagues, and supervisors; and environmental variables, including school and class size, number of preparation periods and classes taught, ability tracks taught, and availability of materials.

II.C.2. Selection of Teachers: Nine urban school districts were selected to participate in the survey -- Bridgeport, Danbury, Hartford, Meriden, Middletown, New Britain, New Haven, Stamford, Waterbury. Relative to other school districts in Connecticut, these communities had lower median incomes, proportionately fewer persons with at least a high school diploma, and lower percentages of persons employed in managerial/professional occupations. Conversely, relative to other communities, these nine school districts had higher proportions of single/parent families, families below the poverty level, and families in which a non-English language is spoken at home (Connecticut State Department of Education, 1990).

The initial survey was mailed to all 230 teachers who were newly-hired as of September 15, 1989. A follow-up survey was mailed in early February, 1990, to all teachers who responded to the initial survey. One hundred seventy-three of the 230 teachers (75.2 percent) returned both the initial and follow-up surveys. Of the respondents, one-third (56 teachers) had no previous full-time teaching experience.

Non-respondents were contacted to determine if self-selection was biasing the results. Twenty-five of the 59 non-respondents were randomly selected proportionately to the district's representation in the original sample. The evidence suggests that the pool of respondents is not a biased sample. Non-respondents appear to include roughly the same proportion of teachers with no previous full-time teaching experience as respondents. Although a higher proportion of males than females seem to have responded, the proportion of non-white respondents approximates that for non-respondents. The mean rating of non-respondents' feelings about teaching was similar to that for respondents, which mitigates the possibility that non-respondents represent those teachers who were feeling the most disaffected or harassed.

II.C.3 Constructing a Dependent Variable: Twenty-one survey items were comprised of statements regarding teachers' abilities to compete with students' environmental influences, to enlist school system resources, and to influence student academic achievement. Respondents were asked to indicate whether they agreed or disagreed with each statement according to a seven-point scale that was anchored at four points -- strongly agree, mildly agree, mildly disagree, and strongly disagree. The pool of items was included on both the initial and follow-up surveys.

A single scale was constructed to represent self-efficacy beliefs. Items that undermined the internal consistency of the scale were removed. The internal consistency of the scale was .75 (Cronbach's Alpha) on the initial survey and .78 on the follow-up.

II.C.4. Analysis of the Quantitative Data: As my primary interest was in the prediction of changes over time, after exploratory descriptive analyses I used the September-February differences to represent growth in self-efficacy beliefs for each of the teachers in my sample. These difference scores were then used as a dependent variable in subsequent between-individual regression analyses. In these latter analyses, relationships between changes in efficacy beliefs and policy-related predictors suggested by the qualitative study were investigated.

III. FINDINGS

III.A Respondents

Demographic data for the 56 beginning teachers are presented in Table 1. Thirty-six (64 percent) of the beginning teachers graduated from Connecticut colleges and universities, 27 of whom attended public universities. Approximately half of the subjects (27) had majored in education in college. Seven (13 percent) of the beginning teachers entered the profession through Connecticut's Alternate Route to Certification program, thus bypassing the traditional teacher preparation avenue.

TABLE 1

BEGINNING TEACHER CHARACTERISTICS (n = 56)

GENDER		RACE	
Female	42 (75 %)	Black	7 (13 %)
Male	14 (25 %)	Hispanic	8 (15 %)
		White	38 (69 %)
AGE		**ASSIGNMENT**	
Maximum	45	Elementary	15
3rd Quartile	34	Special Education	12
Mean	28.5	Secondary	
Median	25	English	3
1st Quartile	23	Mathematics	2
Minimum	21	Science	2
		Bilingual	4
HIGHEST DEGREE HELD		**MEAN SELF-REPORTED SCORES**	
Bachelor's	43 (77 %)	SAT	1006
Master's	13 (23 %)	Undergraduate GPA	3.2

III.B Average Change in Self-Efficacy Beliefs

To maximize statistical power, all analyses were conducted using all respondents for whom I had gathered data. The inclusion of a dichotomous predictor describing beginning teacher status then permitted the simultaneous estimation of effects for teachers who had no prior full-time experience (beginning teachers) as well as newly-hired teachers with previous experience.

For the full data-set, without controlling for other background characteristics, teachers reported a mean decline in self-efficacy belief of .124, which was significantly different from zero ($t = -2.52$, $p = 0.0127$). However, when the decline was disaggregated by beginning teacher status, the decline in self-efficacy belief for beginning teachers was not significantly different from zero, while that of experienced teachers was (mean decline = 0.181, $t = -2.97$, $p = 0.0038$).

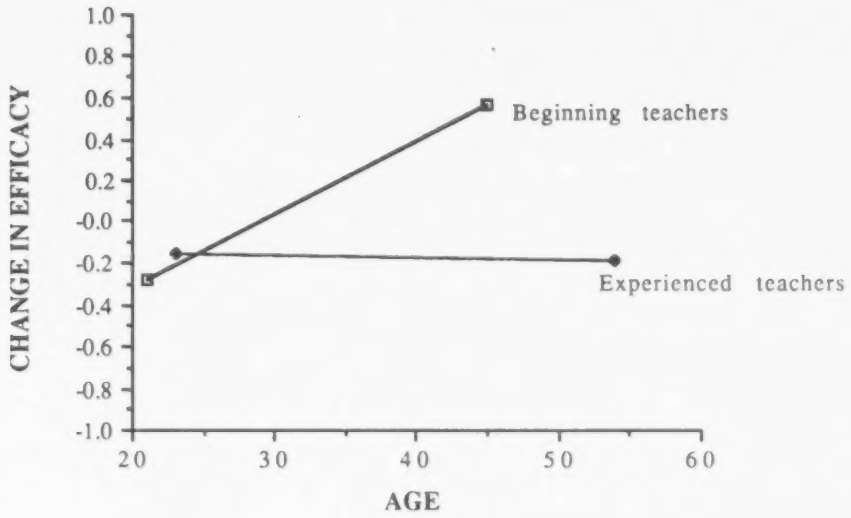
III.C Control Variables

A variety of control variables were included in my regression analyses to determine their effect on decline in self-efficacy beliefs. For purposes of this study, control variables were selected factors over which districts had limited leverage. These predictors included teacher demographic factors, teacher academic achievement indicators, and job assignments.

While no control variable was a significant predictor by itself, the interaction of age and beginning teacher status was significantly associated with growth in self-efficacy beliefs (Appendix 1, Model IV). All beginning teachers were predicted to experience an increase in self-efficacy beliefs, with increased age associated with greater growth. All experienced, newly-hired teachers were predicted to experience declines in efficacy beliefs, with older teachers experiencing larger decreases (see Figure 1). Subsequent regression analyses to investigate the effects of policy-manipulable predictors on change in efficacy controlled for age, beginning teacher status, and their interaction. No other control variable -- including race, SAT score, and school level (elementary/secondary) -- that was investigated was a significant predictor of change in self-efficacy beliefs.

FIGURE 1

EFFECT OF AGE AND BEGINNING TEACHER STATUS ON CHANGES IN SELF-EFFICACY BELIEFS



III.D Regressing Change in Self-Efficacy on the Policy-Manipulable Predictors

All subsequent models controlled for age, beginning teacher status, and their interaction. To this baseline control model were added critical "question" predictors that were identified as important influences on change in self-efficacy during the qualitative analysis. Interactions between control and question predictors were investigated and retained where important (see Appendix 1 for a taxonomy of fitted regression models). For each of the models that are described subsequently I have examined the assumptions of regression analysis by examining residual distributions using the Wilkes-Shapiro W-statistic, by inspecting scatterplots of the residuals, and by evaluating Cook's D statistics for each datapoint.

Three critical influences on change in self-efficacy were suggested by the qualitative analysis: opportunities to collaborate with other adults in the school; the availability and quality of resources; and the attention of

supervisors to the performance of teachers. Each of these predictors is subject to manipulation by school personnel, and is therefore important from a policy perspective.

III.D.1 Collaboration with Other Adults: The teachers who participated in the qualitative study frequently referred to the importance of their interactions with other adults in the school. To represent this construct in my confirmatory regression analyses, I created a composite predictor from items that were comprised of statements about the quality of the teacher's collaboration with other adults in the school. Respondents were asked to indicate whether they agreed or disagreed with each statement according to a seven-point scale that was anchored at four points -- strongly agree, mildly agree, mildly disagree, and strongly disagree. The pool of items was included on both the initial and follow-up surveys.

I used the responses on the follow-up survey to constitute the scale that was used in my regression analyses. Teacher's perceptions of the level of collaboration may be more accurate later in the year than during the early fall, when the initial survey was administered. This hypothesis was supported by interviews with the qualitative study teachers, who tended to be more positive earlier than later in the school year about the degree and quality of their interaction with school administrators and the level of communication and cooperation among faculty. During interviews late in the school year, beginning teachers in the qualitative study revealed that their earlier positive impressions of collaboration were not always sustained in light of their experiences, and they attributed their early perceptions to naivete.

A single scale was constructed to represent the level of collaboration. Items that undermined the internal consistency of the scale were removed. The reliability of the scale as estimated by coefficient Cronbach Alpha was .85. When added to the baseline control model, there was an important main effect of collaboration (see Model V, Appendix 1). Controlling for age and beginning teacher status, greater levels of collaboration were associated with more positive changes in self-efficacy beliefs. Interactions between the collaboration measure and control variables were investigated and none were found to improve prediction of change in efficacy.

III.D.2 Resources: All five teachers in the qualitative study alluded to the importance of material and human resources to their efficacy as teachers. To investigate the effect of resources, I created a composite measure that reflected the presence of materials in the classroom (classroom library, dictionaries, encyclopedias, calculators, computers, plants, and animals) and access to other resources (typewriters, computers/word processors, photocopiers, telephones, and paraprofessional and secretarial assistance). The reliability of the scale as estimated by coefficient Cronbach Alpha was .59.

When added to the baseline control model, there was no main effect of resources. However, age interacted with resources in a manner that predicted growth in self-efficacy beliefs (see Model X, Appendix 1). The model that included the interaction of age and resource predicted that among beginning teachers with low levels of resource, the youngest would experience slight declines in self-efficacy beliefs while older beginning teachers would experience small increases. All newly-hired, experienced teachers with low levels of resource were predicted to experience declines in efficacy beliefs, wit increases in age associated with smaller declines. Among all teachers with high levels of resource, the youngest teachers experienced declines in self-efficacy beliefs while the older teachers experienced increases. Controlling for age, beginning teachers with high levels of resource had more positive changes in efficacy beliefs than experienced teachers with high levels of resource.

III.D.3 Supervisor Observations: The teachers who participated in the qualitative study often stated their desire for feedback on their performance. When such feedback was not forthcoming, these teachers expressed concern that they were not sure where they stood in relation to the expectations that their supervisors held for them. To measure the level of attention of supervisors to the performance of beginning teachers, subjects were asked on the follow-up survey to indicate the number of times their principal or other immediate supervisor had observed their classroom performance.

The effect of supervisor observations was a significant predictor of change in self-efficacy when added to the baseline control model (see Model XIII, Appendix 1). Controlling for age and beginning teacher status, increased numbers of supervisor observations were associated with larger

positive changes in self-efficacy beliefs. Interactions between supervisor observations and the control variables were investigated, but none led to a significant improvement in the prediction of change in self-efficacy.

III.E FINAL MODEL

To explore the simultaneous effect of all three critical question variables, I fitted a series of regression models that included the baseline control model and combinations of the three main effects -- collaboration, resources, and supervisor observations. Interactions between main effects were investigated and retained where important. See Appendix 2 for a taxonomy of fitted regression models involving these several effects. All models that are reported were fitted with two older teachers (ages 47 and 58) who had 13 and 29 years of full-time experience; extreme values on Cook's D statistic; and atypical assignments (both were teachers-at-large who moved from class to class, had few resources, and taught multiple subjects) removed from the dataset.

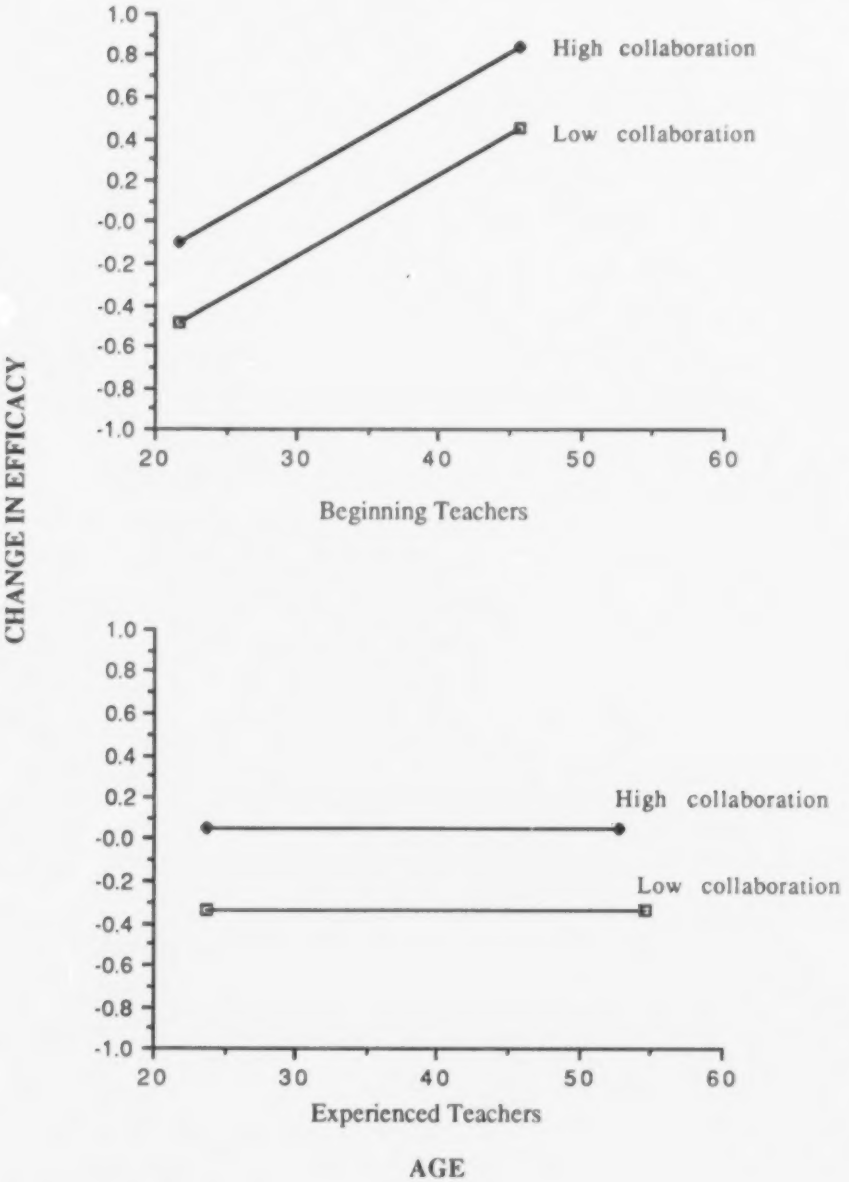
The final model selected for explaining the variation in changes in self-efficacy beliefs was one that included collaboration, resources, and supervisor observations, as well as the interaction between age and resources (Model VII, Appendix 2).

III.E.1 Effect of Collaboration: Controlling for the effect of resources and supervisor observations, the level of collaboration was a significant and substantial predictor of changes in self-efficacy beliefs. Higher levels of collaboration among both beginning and experienced teachers were associated with higher values of change in efficacy beliefs. In addition, among beginning teachers, increased age was associated with higher values of change in efficacy. At the youngest ages (21-25), with resources and supervisor observations set to the median value for all subjects, beginning teachers who reported collaboration levels at the tenth percentile experienced substantial declines in self-efficacy beliefs, while those who reported collaboration at the 90^{th} percentile experienced only slight declines. At the highest ages (40-45), all beginning teachers experienced increases in efficacy, with teachers who reported collaboration levels at the 90^{th} percentile experiencing almost twice the increase of teachers who reported collaboration levels at the tenth percentile (see Figure 2).

FIGURE 2

EFFECT OF COLLABORATION ON CHANGES IN SELF-EFFICACY BELIEFS

(Collaboration set to 10th and 90th percentiles and level of resources and number of supervisor observations set to the median levels for all subjects)



Controlling for level of collaboration among experienced teachers, there was no effect of age. All experienced teachers who reported collaboration levels at the tenth percentile were predicted to experience substantial declines in self-efficacy beliefs. All experienced teachers who reported collaboration at the 90th percentile were predicted to experience slight increases in self-efficacy beliefs (see Figure 2).

III.E.2 Effect of Resources: The interaction between age and level of resources was associated with changes in self-efficacy beliefs when controlling for level of collaboration and the number of supervisor observations. The interactions of age with beginning teacher status and level of resources resulted in several interrelated effects. Increased age is associated with higher values of change in efficacy beliefs for beginning teachers, regardless of the level of resources available. However, the greater the level of resources, the greater the effect of age.

Among experienced teachers, increased age is associated with increased values of change in self-efficacy beliefs when high levels of resources are present. When low levels of resource are present, increased age is associated with decreased values of change in efficacy beliefs for experienced teachers. Figure 3 presents the predicted values of change in efficacy for teachers with their levels of resource at the tenth and 90th percentiles when the level of collaboration and the number of supervisor observations was set to the median value of all subjects.

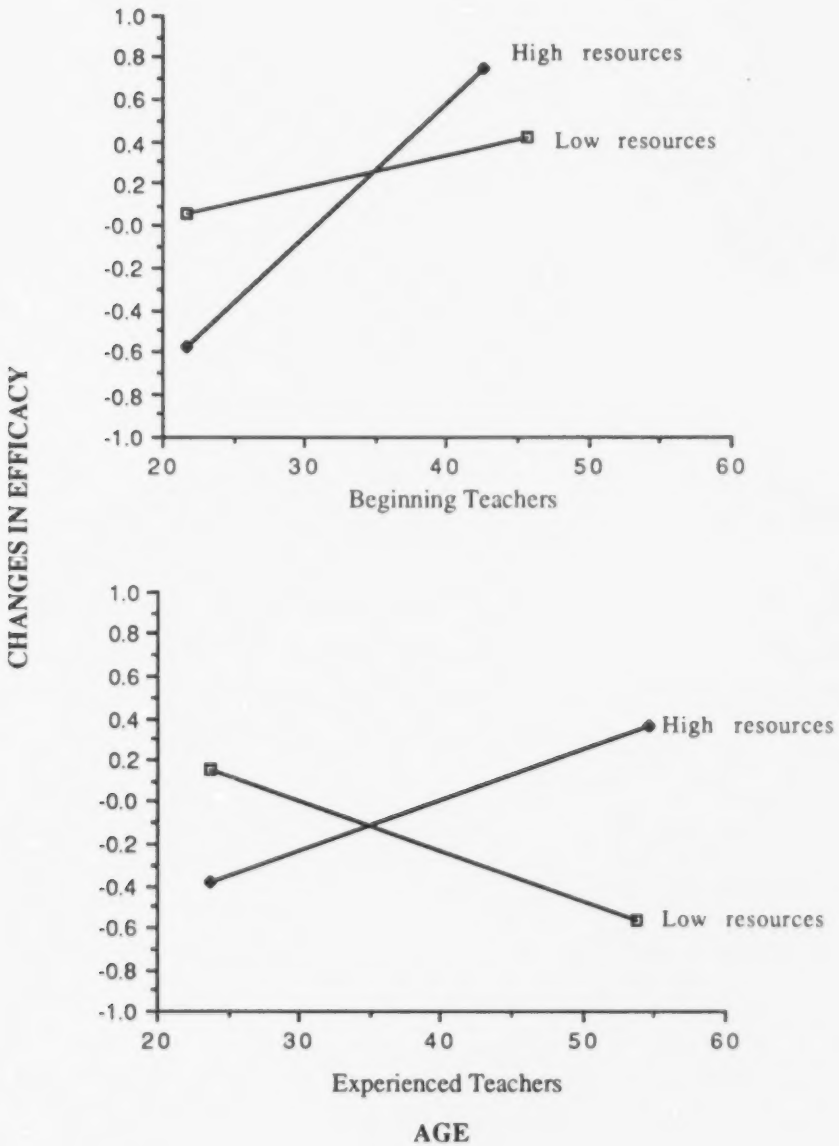
III.E.3 Effect of Supervisor Observations: Setting levels of collaboration and resources to the median values for all teachers, the number of supervisor observations was associated with changes in self-efficacy beliefs, although the effect was not statistically significant ($t = 1.52$, $p = .1314$). This predictor was retained in the final model because of its importance to the qualitative study teachers and its significance in earlier regression models.

For all teachers, greater numbers of supervisor observations predict higher values of change in self-efficacy beliefs. There was no effect of age for experienced teachers, while increased age was associated with higher values of change in efficacy for novices. Among experienced teachers, those who had been observed five times (the 90th percentile) were predicted to experience only slight declines while those who had not been

FIGURE 3

EFFECT OF RESOURCES ON CHANGES IN SELF-EFFICACY BELIEFS

(Resource set to 10th and 90th percentiles and level of collaboration and number of supervisor observations set to the median values for all subjects)



observed experienced more substantial declines in efficacy beliefs (see Figure 4).

IV. DISCUSSION

IV.A Importance of Age

Underlying change in self-efficacy beliefs was the effect of age. In almost all models that were investigated, age was an important predictor of changes in efficacy of beginning teachers. Increased age was associated with more positive changes in efficacy beliefs. In contrast, among experienced teachers, age had little effect on change in efficacy beliefs. Only when the effect of resources was introduced was this confounded.

The effect of age tempers the conclusions from previous studies that found that novices experienced substantial declines in efficacy beliefs. At least among teachers in urban schools, this decline is not universal and is mediated by the age of the beginning teacher. Older individuals who decide to pursue a teaching career in urban schools appear to be more self-assured and certain of their commitment to teaching than are younger novices.

IV.B Policy Manipulable Variables

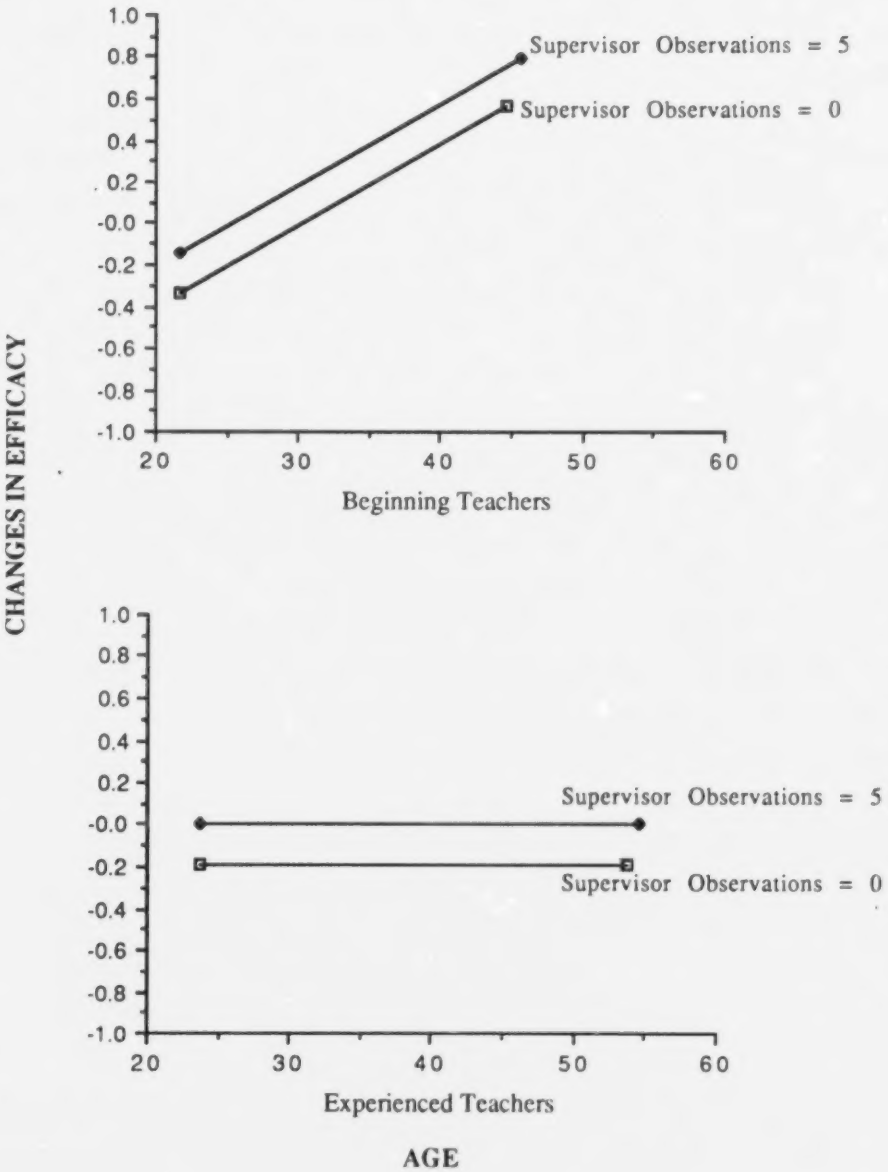
Three critical influences on change in self-efficacy were suggested by the qualitative analyses: opportunities to collaborate with other adults in the school, the availability of material and human resources, and the attention of supervisors to the performance of teachers. Analyses of the quantitative data confirmed that each of these policy variables predicted changes in efficacy, although the effect of supervisor observations was not statistically significant in the final model.

IV.B.1 Collaboration: Much of the school reform literature stresses the need for fostering collegial norms. The findings of this study confirm the importance of collaboration. Opportunities for collaboration with administrators and other teachers were a strong predictor of both novice and experienced teachers' self-efficacy beliefs. Removing the effect of age, teachers who were assigned to schools in which they perceived high degrees of collaboration among teachers and administrators reported substantially higher values of change in self-efficacy beliefs than those who worked in schools with little opportunity for collaboration with other adults.

FIGURE 4

EFFECT OF SUPERVISOR OBSERVATIONS ON CHANGES IN SELF-EFFICACY BELIEFS

(Number of supervisor observations set to 10th and 90th percentiles and levels of collaboration and resources set to the median values for all subjects)



While age had a significant effect on growth in efficacy among beginning teachers, the data suggest that opportunities for collaboration can compensate for the effect of age. Among novice teachers who reported high levels of collaboration, only the youngest experienced declines in self-efficacy beliefs, and those declines were modest. In contrast, young beginning teachers who experienced low levels of collaboration reported substantial declines in efficacy beliefs, with increases in efficacy beliefs only predicted for those in their late thirties and forties.

IV.B.2 Supervisor Attention to Teacher Performance: Greater numbers of supervisor observations were associated with more positive changes in self-efficacy beliefs for both novice and experienced teachers. Among beginning teachers, the number of supervisor observations appears to have the potential to mitigate the effect of age. Young beginning teachers who had not been observed by their supervisor as of the second semester of the school year experienced much larger declines in efficacy than those who had been observed a number of times. Additionally, some novices who eventually did receive feedback from their administrators were not observed until after the Christmas break, and in some cases feedback was not provided until several weeks following the observation. These findings offer evidence that the feeling of uncertainty about personal efficacy and performance experienced by the teachers in the qualitative study who received little feedback was likely more than an idiosyncratic phenomenon.

IV.B.3 Resources: The effect of resources contradicted the conventional wisdom of the teachers with whom I spoke. All the teachers in the qualitative study stressed the need for adequate resources and materials, and were convinced that a teacher could not have too many. Analysis of the quantitative data produced evidence that contradicted this belief.

At young ages, both experienced and beginning teachers with high levels of resources experienced substantial declines in self-efficacy beliefs, while those with few resources experienced slight increases. In contrast, older teachers, whether experienced or beginning, who had high levels of resource, reported increases in efficacy beliefs. Increased age was associated with more positive change in efficacy for all novice teachers, regardless of the availability of resources. Among experienced teachers,

increased age resulted in more positive change in efficacy when higher levels of resource were present, but was associated with less positive change in efficacy beliefs when few resources were present.

The evidence regarding resources needs further investigation. One explanation for the resource effect that was suggested by the experience of the teachers in the qualitative study could be characterized as a "decision overload" phenomenon. While all novices expressed the desire for as many resources as possible, a richness of resources results in a proliferation of instructional choices and increases the curricular management demands on the teacher. Perhaps experienced teachers and older novice teachers find that this richness of choice enhances their instructional efficacy.

The teacher in the qualitative study who had access to the most resources found this richness to be problematic. She was a young, secondary English teacher who had a large number of literary texts and curricular materials which were available for her use. The curricular and instructional choices that resulted were accompanied by unclear expectations and direction for making decisions regarding those options. As this teacher's experienced colleague noted, "It is so broad ... They leave it up to you what you cover ... So there is some freedom. Perhaps it is too much ... When I started ... it was very, very structured. Because it gave me a starting base and I knew exactly what I had to do and what I had to accomplish."

IV.C Policy Implications

There are two dimensions to policy implications that are suggested by these findings. One concerns the assignment of teachers within districts and the other the manipulation of factors that predict change in teacher self-efficacy beliefs.

IV.C.1 Teacher Assignment: Because teacher age and opportunities for collaboration are strong predictors of changes in self-efficacy beliefs, district placement policy should attend to these variables. Within the constraints of certification, contractual, and other staffing considerations, a systematic attempt to place younger beginning teachers in schools with cultures that have a strong collegial norm is likely to enhance novices' beliefs that they have the ability to influence the growth of their students. Where vacancies must be filled in schools with low

levels of collaboration, older beginning teachers are more likely than their younger colleagues to experience growth in self-efficacy beliefs.

IV.C.2 Manipulating the Predictors: The second policy implication stems from the finding that schools can influence teachers' feelings of efficacy and empowerment by attending to collegiality norms, resource allocation, and supervisor's attention to teacher performance. Institutions that offer greater opportunities for teachers to reflect on teaching and learning with their colleagues; for teachers to share the responsibility for making decisions regarding curriculum and instruction; and for administrators and teachers to collaborate and communicate foster more positive changes in self-efficacy beliefs of both novice and experienced teachers than schools where such opportunities are few. School districts should promote teacher and administrator collaboration and offer support and incentives to building principals to develop collegial norms.

The results of this study suggest that the distribution and level of resources is not simply a matter of "more is better." Where limited resources are the reality, the prediction of which teachers are more likely to benefit from such resources should be considered. Young teachers, whether experienced or not, who have access to high levels of resources, should have a high level of support and/or structure to assist them in managing the array of instructional and curricular options. Older beginning teachers appear to have the resourcefulness and zeal to overcome low levels of resource. Where choices must be made, older novices are more likely to experience positive change in efficacy beliefs in the face of low levels of resource than are older experienced teachers. Older experienced teachers should be provided with adequate levels of resource. Lack of resources for these teachers tends to result in depressed self-efficacy beliefs.

School administrators should be encouraged to take an active role in the supervision and evaluation of teachers. Whether experienced or not, teachers benefitted from working with an administrator who paid attention to performance issues. Teachers appreciated objective feedback that was focused on important aspects of instruction. Teachers wanted clear messages about where they stood in relation to the expectations that

their supervisors held for them. And novices want this feedback early in the school year.

V. CONCLUSION

Analyses of people's beliefs about their ability to exercise control over the events that affect their lives have concluded that the self-efficacy mechanism is a central determinant of a person's ability to exert power, action, and influence. This study confirmed that, within urban schools, changes in teachers' self-efficacy beliefs are influenced by variables that are subject to manipulation. Opportunities for collaboration, allocation of resources, and the attention of supervisors to issues of teacher performance are associated with teachers' beliefs about their efficaciousness. Further research on the relationships between teacher self-efficacy beliefs, attitudes toward teaching, teacher instructional effectiveness, and teacher career patterns promises to inform policy that can influence the quality of teaching and learning in urban schools.

APPENDIX 1

PREDICTING CHANGES IN TEACHER SELF-EFFICACY BELIEFS

Fitting a Taxonomy of Regression Models

(Standard error of the parameter estimates in parentheses)

MODEL	INTER-CEPT	AGE [a]	BT [b]	Inter-action AGExBT	COLLAB	COLLAB x AGE	COLLAB x BT	RE-SOURCE	RE-SOURCE x AGE	RE-SOURCE x BT	SUPOBS	SUPOBS x AGE	SUPOBS x BT	R^2	dfE
I	-.1202*	.0036												.0026	146
	(.0495)	(.0059)													
II	-.1706**		.1425											.0133	148
	(.0617)		(.1010)												
III	-.2011**	.0103	.2434*											.0332	144
	(.0639)	(.0065)	(.1145)												
IV	-.1695**	.0012	.3452**	.0358*										.0771	143
	(.0638)	(.0077)	(.1188)	(.0137)											
V	-.8327***	-.0017	.3371**	.0381**	.1387***									.1529	142
	(.1959)	(.0075)	(.1143)	(.0132)	(.0389)										
VI	-.8296***	-.0211	.3493**	.0376**	.1372***	.0043								.1574	141
	(.1961)	(.0234)	(.1152)	(.0132)	(.0390)	(.0049)									
VII	-.8800***	.0017	.4538	.0380**	.1486**		.0242							.1534	141
	(.2504)	(.0075)	(.3994)	(.0133)	(.0507)		(.0794)								
VIII	-.8315**	.0210	.3540	.0376**	.1376**	.0042	.0010							.1574	140
	(.2576)	(.0248)	(.4182)	(.0133)	(.0525)	(.0052)	(.0845)								
IX	-.3635*	-.0013	.3580**	.0375**				.0331						.0913	140
	(.1477)	(.0079)	(.1197)	(.0139)				(.0232)							
X	-.3367*	-.0448**	.3783**	.0357**				.0277	.0078**					.1421	139
	(.1443)	(.0170)	(.1169)	(.0135)				(.0227)	(.0027)						
XI	-.4908**	-.0013	.7605*	.0351*				.0554*		.0726				.1048	139
	(.1714)	(.0078)	(.3025)	(.0139)				(.0276)		(.0501)					
XII	-.3208*	-.0462*	.3317	.0359**				.0249	.0081*	.0085				.1422	138
	(.1820)	(.0199)	(.3447)	(.0137)				(.0300)	(.0033)	(.0593)					
XIII	-.3082***	-.0023	.3278**	.0366**							.0629**			.1292	135
	(.0835)	(.0077)	(.1149)	(.0134)							(.0232)				
XIV	-.3083***	-.0040	.3274**	.0361**							.0634**	.0008		.1298	134
	(.0838)	(.0098)	(.1153)	(.0135)							(.0234)	(.0029)			
XV	-.3230***	-.0021	.3684*	.0361**							.0691*		-.0162	.1300	134
	(.0945)	(.0077)	(.1666)	(.0135)							(.0297)		(.0479)		
XVI	-.3198**	-.0032	.3593*	.0360**							.0680*	.0005	-.0126	.1301	133
	(.0974)	(.0105)	(.1788)	(.0136)							(.0307)	(.0032)	(.0541)		

KEY: `p<.10 *p<.05 **p<.01 ***p<.001 [a] AGE centered on 34 years [b] 0 = experienced teacher, 1 = beginning teacher

APPENDIX 2

PREDICTING CHANGES IN TEACHER SELF-EFFICACY BELIEFS

Fitting a Taxonomy of Regression Models

(Standard error of the parameter estimate in parentheses)

		BASELINE CONTROLS			MAIN EFFECTS			INTERACTIONS					
MODEL	INTER-CEPT	AGE [a]	BT [b]	AGE x BT	COLLAB	RE-SOURCE	SUPOBS	RE-SOURCE x AGE	COLLAB x RE-SOURCE	RE-SOURCE xSUPOBS	COLLAB x SUPOBS	R^2	dfE
I	0.8481*** (.2247)	-.0060 (.0078)	.3420** (.1150)	.0408** (.0130)	.1408*** (.0414)	.0016 (.0241)						.1619	131
II	0.9206*** (.2209)	-.0518** (.0184)	.3678** (.1127)	.0397** (.0132)	.1495*** (.0405)	.0056 (.0236)		.0082** (.0030)				.2076	130
III	0.8237*** (.2016)	-.0047 (.0078)	.3348** (.1135)	.0400** (.0133)	.1161** (.0425)		.0428 (.0245)					.1809	131
IV	0.3348* (.1533)	-.0031 (.0080)	.3358** (.1170)	.0375** (.0137)		.0024 (.0248)	.0650** (.0245)					.1343	131
V	0.3615* (.1516)	-.0407* (.0189)	.3585** (.1158)	.0366** (.0135)		.0077 (.0246)	.0609* (.0243)	.0068* (.0031)				.1651	130
VI	-0.7946*** (.2250)	-.0047 (.0078)	.3323** (.1142)	.0397** (.0134)	.1179** (.0431)	-.0072 (.0244)	.0443 (.0251)					.1815	130
VII	-0.8711*** (.2222)	-.0479* (.0184)	.3581** (.1123)	.0389** (.0131)	.1297** (.0424)	-.0022 (.0240)	.0376 (.0247)	.0077* (.0030)				.2215	129
VIII	0.2428 (.5540)	-.0492** (.0184)	.3405** (.1130)	.0364** (.0133)	.0049 (.1093)	.1199 (.0981)	.0373 (.0247)	.0082** (.0030)	.0231 (.0187)			.2307	128
IX	-1.0980*** (.2798)	-.0461* (.0184)	.3553** (.1120)	.0381** (.0131)	.1240** (.0425)	.0415 (.0405)	.1399 (.0803)	.0076* (.0030)		-.0163 (.0122)		.2323	128
X	-1.0498** (.3185)	-.0486** (.0185)	.3593** (.1125)	.0415** (.0135)	.1667** (.0635)	.0030 (.0241)	.1313 (.1221)	.0078* (.0030)			-.0175 (.0223)	.2252	128
XI	-0.3180 (.5516)	-.0473* (.0183)	.3306** (.1123)	.0345* (.0132)	.0468 (.1126)	-.1043 (.0978)	.1716* (.0821)	.0081** (.0030)	.0313 (.0191)	-.0215 (.0125)		.2481	127
XII	-0.4088 (.5850)	-.0501** (.0185)	.3408** (.1131)	.0392** (.0136)	.0396 (.1161)	.1278 (.0986)	.1437 (.1221)	.0082** (.0030)	.0245 (.0187)		-.0198 (.0223)	.2355	127
XIII	-1.1777*** (.3367)	-.0467* (.0185)	.3563** (.1124)	.0397** (.0136)	.1454 (.0660)	.0370 (.0420)	.1832 (.1299)	.0076* (.0030)		-.0148 (.0128)	-.0099 (.0232)	.2334	127
XIV	0.3987 (.5820)	-.0479* (.0184)	.3315** (.1126)	.0361** (.0137)	.0249 (.1231)	.1095 (.0988)	.2169 (.1307)	.0082** (.0030)	.0314 (.0192)	-.0199 (.0131)	.0103 (.0230)	.2493	126

KEY: ˙p<.10 *p<.05 **p<.01 ***p<.001 [a] AGE centered on 34 years [b] 0 = experienced teacher, 1 = beginning teacher

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